

system motion control. Prior art control techniques are typically single output – single input control techniques as described especially in the examples beginning at page 29. See especially page 31 beginning at line 14 to line 6 on page 32.

CONCLUSION

For the above reasons, Applicants submit that the claims as now limited disclose an important invention not described or suggested by the prior art. Therefore, applicants submit that the claims should be allowable and request that they be allowed and the application be allowed to issue as a patent.

Applicants' do not believe any fee is due in connection with this submission however if fees are due, the Commissioner is authorized to charge our Deposit Account No. 03-4060 the appropriate amount.

Respectfully submitted,



John R. Ross; Reg. No. 30,530

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Cymer, Inc.
Legal Department - MS/1-2A
16750 Via Del Campo Court
San Diego, California 92127-1712
Telephone: 858-385-7185
Facsimile: 858-385-6025

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VERSION SHOWING CHANGES MADE FOR USSN 09/803,320

Title: (Amended) ~~"METHOD AND DEVICE FOR VIBRATION CONTROL"~~
"MULTI-INPUT, MULTI-OUTPUT MOTION CONTROL FOR
LITHOGRAPHY SYSTEM"

IN THE SPECIFICATION:

Please revise the first paragraph on page 1 beginning at line 3 with the following:

--This application is a continuation-in-part of U.S. Application No. 09/491,969, filed January 27, 2000, which claims the benefit of U.S. Application No. 60/117,671, filed January 28, 1999, and is a continuation-in-part of U.S. application No. 09/261,475, filed February 26, 1999 (now U.S. Patent No. 6,404,107), which is a continuation-in-part of U.S. Application No. 08/943,645, filed October 3, 1997 (now U.S. Patent No. 6,069,433), which is a continuation of U.S. Application No. 08/188,145, filed January 27, 1994 (now U.S. Patent No. 6,420,819), the disclosures of each of which are hereby incorporated by reference.—

Please revise the Abstract as follows:

--A multi-input, multi-output vibration control system comprising for a lithography system. The system provides an actuator, and a sensor useful for controlling vibrations in systems for fabricating electronics equipment. The system includes a processor programmed with a multi-input, multi-output control technique such as a linear quadratic Gaussian, H-infinity or mu synthesis. The actuator may comprise one or more plates or elements of electroactive material bonded to an electroded sheet.--

In the Claims:

Please amend claim 1 as follows:

1. (Amended) A motion control system for use with a lithography system, said motion control system comprising:
 - a wafer stage base;
 - at least two actuators for controlling motion;

at least two sensors for detecting at least one parameter of displacement of said wafer base and producing at least two signals in response thereto; and

at least one circuit in electrical communication with said actuators and said sensors; wherein said circuit comprises a computer processor programmed with a multi-input, multi-output control technique selected from the following group of control techniques: linear quadratic Guassian, H-infinity and mu synthesis;

wherein, upon the detection of said at least one parameter of displacement by said sensors, said sensors signal said circuit, which, in response, utilizing said control technique activates said actuators to stabilize the wafer stage base to minimize vibration.

6. Canceled

7. Canceled

9. (Amended) A motion control system for use with a lithography system, said motion control system comprising:

a wafer stage base;

at least two actuators for controlling motion;

at least two sensors for detecting at least one parameter of displacement of said wafer base and producing at least two signals in response thereto;

a signal conditioner; and

a single board computer programmed with a multi-input, multi-output control technique selected from the following group of control techniques: linear quadratic Guassian, H-infinity and mu synthesis;

wherein, upon the detection of said at least one parameter of displacement by said sensors, said sensors feed a signal to said signal conditioner, said signal conditioner feeds a signal to said single board computer, and said single board computer commands said actuators to command said wafer stage to track a commanded position.